# Preliminary Close Out Report
# Sharpe Defense Depot
# San Joaquin County, California

## I. INTRODUCTION

The Preliminary Close Out Report (PCOR) documents that the U.S. Defense Logistics Agency (DLA) has completed all construction activities for the Sharpe Defense Depot in accordance with Close Out Procedures for National Priorities List Sites (OSWER Directive 9320.2-09A-P). The DLA has determined that the remedy was constructed in accordance with remedial design (RD) plans and specifications. The DLA has initiated activities necessary to achieve performance standards and site completion.

## II. SUMMARY OF SITE CONDITIONS

### Background

Defense Distribution Depot San Joaquin, California, Sharpe (DDJC-Sharpe) is a distribution depot operated by the DLA to supply all military services with the equipment needed to fulfill their mission.

Soil and groundwater contamination were first detected at DDJC-Sharpe in 1982. Remedial investigation (RI) work that followed soon indicated groundwater contamination and the off-site migration of volatile organic compounds (VOCs). Investigation data indicated that the primary cause of VOC contamination was mission-related activities, such as vehicle repairs. Metals contamination of soils at the DDJC-Sharpe facility occurred as a result of various activities, including the disposal of paints, paint solvents, and sandblasting wastes.

The Sharpe Defense Depot was proposed for listing on the National Priority List on October 15, 1984. The proposed listing was finalized on July 7, 1987. The facility, the United States Environmental Protection Agency (USEPA), the California Environmental Protection Agency's Department of Toxic Substances Control (Cal-EPA/DTSC) and the California Environmental Protection Agency's Regional Water Quality Control Board (Cal-EPA/RWQCB) signed a Federal Facility Agreement on March 16, 1989, formalizing USEPA's oversight authority.

USEPA conducted a pre-final site inspection on June 10, 2003 and was able to verify that construction was complete. There is no punch list of remaining tasks.

Remedial Construction Activities, Base-Wide

This section describes the remedial or removal actions taken at operable units (OUs) 1 and 2 and the current status of each OU. The reasons for the actions, including possible human health risks or other applicable or relevant and appropriate cleanup levels, RODs, and remedial action reports (RARs), are presented, and the actions are described.

*OU-1 Groundwater*

OU-1 was addressed in three actions beginning in 1987. Actions in two areas were undertaken as non-time critical removal actions. The actions were taken because groundwater was contaminated with TCE and other VOCs at concentrations exceeding MCLs for drinking water. The aquifer cleanup levels (ACLs) for groundwater defined in the OU-1 ROD are 5 micrograms per liter (ug/L) for TCE, 5 ug/L for 1,1-dichloroethane (DCA), 5 ug/L for para-dichlorobenzene, 6 ug/L for cis-1,2-dichloroethene (DCE), 10 ug/L for ortho-dichlorobenzene, 10 ug/L for trans-1,2-DCE, 200 ug/L for 1,1,1-trichloroethane (TCA), 0.5 ug/L for Tetrachloroethene (PCE) and 0.5 ug/L for most other VOCs.

The ROD for OU-1 was signed by US EPA on January 25, 1993. The requirements for the selected remedy are:

- groundwater extraction,
- air stripping, and
- gas-phase carbon adsorber for VOC off-gassing at one of three treatment units.

The remedy for the disposal of treated groundwater allows

- surface water discharge,
- water reuse,
- evaporation/infiltration ponds and injection wells.

Three groundwater treatment plants known as the North Balloon treatment plant, the South Balloon treatment plant, and the Central Area treatment plant, were constructed at DDJC-Sharpe to address the contaminants, primarily TCE and PCE, identified in the OU-1 ROD. These treatment plants, with their associated extraction wells and discharge facilities, were constructed in accordance with the requirements of the selected remedy as documented in the Remedial Investigation/ Feasibility Study and Record of Decision, Operable Unit 1. They constitute the remedy for OU-1 groundwater required by the OU-1 ROD, and they are currently operational.

An interim Remedial Action Report (RAR) documenting that the remedy had been constructed and was operating as planned was approved by USEPA on July 2, 2001.

*OU-2 Soils, SVE, Metals and Pesticides*

The facility commenced a removal action in 1994, before the OU-2 ROD was signed, for pesticide contaminated soils in the Pesticide Mix Area. Action was triggered by risk to workers posed by the concentrations of pesticides in soil. The cleanup levels were as follows: Chlordane 1 mg/kg, DDE 2 mg/kg, DDD 3 mg/kg, DDT 2 mg/kg, and dieldrin 0.04 mg/kg. In December 1994 the facility removed 480 cubic yards. Confirmation sampling in February 1995 triggered the need for the removal of an additional 23 cubic yards. All necessary excavation was achieved by October 1996.

The ROD for OU-2 was signed by EPA on March 5, 1996. This ROD designated 111 sites for No Further Action (NFA), 14 sites for further action as a result of VOC contamination, primarily by TCE, and 14 other sites for further action as a result of metals contamination (specifically, lead and chromium). Each of the 111 NFA sites were removed from the action list for either a) posing no current or potential threat to human health or the environment or b) being exempt from CERCLA. Of the remaining 28 sites for action and/or further evaluation, EPA later designated 14 of these 28 sites as NFA in a RAR approved on April 10, 2001. Of the more recent 14 NFA sites, 11 are contaminated with VOCs while the remaining 3 sites are contaminated with metals. It was determined that VOC concentrations at the 11 sites would not impact groundwater and it was found that the elevated metal concentrations at the 3 metals sites could not be replicated during resampling. Of the 14 sites identified for remedial action, 8 were minor areas of elevated metals concentrations which were ultimately combined into sites S-3 and S-26 and the remaining 6 VOC sites were identified as P-1A, P-1B, P-1C, P-1E, P-6A and P-8A.

The cleanup levels, established to be protective of an industrial worker, were defined as 1000 mg/kg for lead and 300 mg/kg for chromium. The OU-2 selected remedy for sites of lead and chromium contaminated soils was as follows:

- delineation of contaminated soils,
- removal of pavement/concrete,
- excavation of soils which exceed cleanup standards,
- analyze excavated soils for transport to an appropriately permitted offsite landfill,
- confirmation sampling,
- backfill of excavations, and
- evaluate any residual concentrations for potential to impact groundwater.

The RAR for metals was approved by EPA on September 10, 1999.

The ROD cleanup standard for VOCs in soil was based on either a soil gas concentration of 350 ppbv or modeling which demonstrated no further threat to groundwater. The OU-2 selected remedy for TCE contaminated soils was as follows:

- delineate areas of soil gas,
- use SVE to remove soil vapors exceeding cleanup standards,
- treat gases prior to discharge to the atmosphere.

The SVE system successfully reduced levels of VOC soil gas to the standards of the ROD and modeling demonstrated no further threat to groundwater. The RAR for the SVE sites was approved by EPA on July 2, 2002.

## III. DEMONSTRATION OF CLEANUP ACTIVITY QUALITY ASSURANCE (QA) AND QUALITY CONTROL (QC)

Remedial activities at DDJC-Sharpe were consistent with the ROD and the individual remedial action designs.

### OU-1 Groundwater Cleanup Demonstration

As specified in the ROD, the function of the OU-1 remedy is "to prevent migration of contaminated groundwater and capture the contaminant plumes." The DDJC-Sharpe Well Monitoring Program and its associated QA plan are used to continually assess the effectiveness of containment and aquifer remediation. The U.S. EPA, DTSC, and Central Valley RWQCB have provided program review and oversight throughout the design, construction, and operational activities.

The well arrays have been modified to capture contaminated groundwater as it migrates within the depot boundaries and, for the plumes beyond the boundaries, as they migrate west and north. To assure containment of the VOC plumes, three extraction wells were constructed in 2000; all have been connected to the treatment systems and are operating. No additional well construction is anticipated to meet the ACLs and the OU-1 ROD target year to achieve remedial action cleanup levels is 2011.

### OU-2 Soil Remedial Action (VOCs) and Cleanup Demonstration

#### *OU-2 Soil Remedial Action (VOCs)*

A construction QC program was developed during construction of the SVE wells to ensure that the remedy would be implemented consistent with the requirements of the OU-2 ROD. The construction inspection process was documented in daily construction reports. The SVE extraction and monitoring wells and the vapor conveyance, piping, and SVE treatment systems were constructed in accordance with the remedial design as documented in the design and approved by the agencies.

The mass of TCE extracted was monitored during weekly compliance monitoring of the SVE system. Weekly monitoring of the SVE system and sampling of soil gas in extraction and monitoring wells and of soil during closure/confirmation sampling activities were performed according to the guidelines of the DDJC-Sharpe/Tracy Comprehensive Field Work Plan and the Soil Vapor Extraction Implementation Work Plan. The QA/QC for the analytical results was performed according to the Quality Assurance Project Plan (QAPP). The closure/confirmation sampling conducted after Phase 4 in January 2002 showed that the lateral and vertical extent of TCE contamination in the soil gas has been greatly reduced and that the TCE concentrations either meet the cleanup standard of 350 ppbv for TCE or have been

demonstrated via modeling to pose no threat to groundwater.

*OU-2 Soil Remedial Action (Metals)*

The OU 2 ROD specified soil cleanup standards of 1,000 and 300 mg/kg for lead and chromium, respectively. The ROD-selected remedy for soil contaminated with lead and chromium levels greater than the cleanup standards was excavation and disposal in a Class I or Class II landfill. This remedy was implemented at two the two sites with metal contamination (S-3 and S-26).

The ROD cleanup standards for Sites S-3 and S-26 were achieved as a result of the remedial actions performed, including sampling, waste profiling, excavation, transportation, disposal, and backfilling of excavation sites.

*OU-2 Soil Removal Action (Pesticides)*

The cleanup standards identified in the Action Memorandum were met for the Pesticide Mix Area through sampling, waste profiling, excavation, and off-site disposal of the soils in accordance with the Project Work Plan and in compliance with California regulations.

## IV. ACTIVITIES AND SCHEDULE FOR SITE COMPLETION

All remedial actions on DDJC-Sharpe have been constructed. For OU-1, groundwater extraction systems and treatment systems are in place and operating. The systems are expected to continue operation until 2011 or longer to assure ACLs are attained. Future adjustments are expected to include well replacements or shutdowns to optimize the operation of the extraction systems as the VOC plumes are reduced in size.

The work remaining to be completed includes:

| Task | Estimated Completion | Responsible Organization |
|---|---|---|
| Five Year Review | 08/03 | DLA/EPA |
| Second Five Year Review | 08/08 | DLA/EPA |
| Complete GW Pump & Treat | 2011 | DLA |
| Final Close Out Report | 2012 | EPA |
| Deletion from NPL | 2013 | EPA |

Additionally, the facility has implemented an institutional control (industrial land use restriction for the South Area) in the Base Master Plan. EPA and the facility will document this control in an Explanation of Significant Differences.

## V. SUMMARY OF REMEDIATION COSTS

The original cost estimate to implement the groundwater remedial action described in the 1993 ROD was $4,147,000. The basis for the 1993 ROD cost estimate is unclear, however, a sixteen year treatment period was assumed. The Central treatment plant commenced operation in 1995. Therefore, according to the OU-1 ROD, ACLs would be achieved in 2011. Actual cleanup time may vary. The cost estimate in the OU-1 ROD excluded construction of the North and South treatment plants since these components were built as interim actions prior to 1993. Current construction costs include preliminary design analysis, design, construction oversight and reporting. It was more recently estimated that the annual operation and maintenance (O&M) cost for the remedy is approximately $464,000 per plant or about $1.4 million for all three systems. Whereas the 1993 OU-1 ROD estimated O&M to be $2,140,000 for the life of the remedy. DLA has estimated the final construction cost for the entire groundwater remedial action, including operation and maintenance expenditures, at $14,437,000.

The ROD estimate for the OU-2 remedial action was $674,772. According to DLA the actual cost was $1,959,047. The greatest change occurred in the SVE remedy which was estimated at $286,000 and which cost $1,068,000. This difference can be attributed largely to the fact that the original ROD estimate represented only capital cost. Further, the remedy operated for 42 months, whereas the ROD had estimated 24 months.

| Site/OU | Cost Item | ROD Est. | Actual Cost |
|---|---|---|---|
| OU-1 groundwater | Capital and O&M | $4,147,000 | $14,437,000 |
| OU-2 Soils | | | |
| Pesticide mix area | excavation and disposal | $115,772 | $299,000 |
| S-3 and S-26 | excavation and disposal | $221,000 | $358,047 |
| SVE sites | capital and O&M | $286,000 | $1,068,000 |
| IC sites | RAR Document preparation | No estimate | $13,000 |
| NFA sites | RAR Doc. preparation | $52,000 | $221,000 |

## VI. FIVE-YEAR REVIEW

The facility has committed to providing base-wide five-year reviews consistent with the requirements of the National Contingency Plan. These are statutory five-year reviews since contamination remaining on the site exceeds levels that would allow for unrestricted future use. The facility's first five-year review is to be finalized in 2003. The second five-year review is expected in 2008.

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Date